The section devoted to parasitic insects and other Arthropods opens with an account of mosquitoes which covers some twenty pages and contains in addition to general matter much valuable information on the carriers of malaria and yellow fever, and on other mosquitoes of the Amazonian region, based on original observations made by the author. Following this is a similar but shorter discussion of the gad-flies (Tabanidæ), the blood-sucking Muscidæ, Simuliidæ, Chironomidæ and Psychodidæ. The phlebotomic members of these families are spoken of by Göldi as habitual (professionelle) blood-suckers and hemiparasites (Halbparasiten) in distinction of other wholly parasitic forms (Ganzparasiten) which remain on the host during their entire life, or at least during their preparatory stages. Following this is an account of the more highly modified Diptera Pupipara and the fleas, the latter being treated at some length. The sucking lice are briefly mentioned as well as bedbugs and a few other blood-sucking Hemiptera. Ticks and mites follow, the mites receiving by far more space in proportion to their importance as disease carriers. Under the heading of myiasis are described many of the Diptera which develop regularly or occasionally as internal parasites of man and other mammals.

The third chapter on "Insects and Related Arthropods as Carriers of Disease" deals with the distribution and manner of transfer of insect-borne diseases, as well as with the morphology and life-cycles of a number of the causal microorganisms, such as the malarial parasites, trypanosomes, filarias, etc.

The volume is profusely illustrated by 171 text-figures, mainly in half-tone, derived from various sources with a smaller number of original figures. All are well selected, but many are inferior to those in the original works from which they have been copied. Some of the names applied to the insects mentioned are rather antiquated; thus one sees *Lucilia macellaria* and *Musca vomitoria* appearing in the text in place of generic names which have been used for many years. In the description of Fig. 103, representing some North American ticks, there is an unfortunate confusion of names, where *Dermacentor venustus,* the vector of Rocky Mountain spotted tick fever, is referred to as the "gefleckte Texasfieberzecke des Felsengebirges" (Rocky Mountain spotted Texas-fever tick). This species has, of course, no connection with Texas fever of cattle.

The text is well printed, furnished with a good index, and shows only a small number of typographical errors. So far as the reviewer can judge, there are no serious errors of statement, although some parts, such as those on the food and anatomical characters of the larvæ of *Stomoxys calcitrans,* are open to some criticism.

The book is one which may well be placed in the hands of students as a text, and it is to be hoped that its author may later see fit to enlarge it into a more extended treatise.

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SCIENTIFIC JOURNALS AND ARTICLES

In January, 1913, *The American Mathematical Monthly* passed into the control of an editorial board consisting of representatives of twelve supporting universities and colleges in the middle west, together with B. F. Finkel, founder of the *Monthly* and editor since its inception in 1894.

It is the editorial policy of this journal to appeal especially to teachers of mathematics in the collegiate and advanced secondary fields, not only for the purpose of directing attention to questions of improvement in teaching in these fields, but also to foster the development of the scientific spirit among large numbers who are not now reached by the more technical journals.

A selection from the Tables of Contents of the first six numbers includes articles on—

The History of Mathematics, such as the following:

"History of the Exponential and Logarithmic Concepts," by Professor Florian Cajori, of Colorado College.

"The Foundation Period in the History of

Group Theory,'' by Josephine Burns, graduate student at the University of Illinois.

''Errors in the Literature on Groups of Finite Order,'' by Professor G. A. Miller, University of Illinois.

Pedagogical Considerations, such as the following:

''The 'Foreword' concerning Collegiate Mathematics,'' by Professor E. R. Hedrick, University of Missouri.

''Mathematical Literature for High Schools,'' by Professor G. A. Miller.

''Minimum Courses in Engineering Mathematics,'' by Professor Saul Epsteen, University of Colorado.

''Incentives to Mathematical Activity,'' by Professor H. E. Slaught, University of Chicago.

General Mathematical Information, such as the following:

''The Third Cleveland Meeting of the American Association for the Advancement of Science,'' by Professor G. A. Miller.

''Western Meetings of Mathematicians,'' by Professor H. E. Slaught.

''Notes and News'' of events pertaining to mathematics, under the direction of a committee of which Professor Florian Cajori is chairman.

''Book Reviews'' and announcements of new books in mathematics, under the direction of a committee of which Professor W. H. Bussey, University of Minnesota, is chairman.

Topics Involving a Minimum of Technical Treatment, such as the following:

''Maximum Parcels under the New Parcel Post Law,'' by Professor W. H. Bussey.

''Precise Measurements with a Steel Tape,'' by Professor G. R. Dean, Missouri School of Mines.

''A Direct Definition of Logarithmic Derivative,'' by Professor E. R. Hedrick.

''A Simple Formula for the Angle between Two Planes,'' by Professor E. V. Huntington, Harvard University.

''Two Geometrical Applications of the Method of Least Squares,'' by Professor J. L. Coolidge, Harvard University.

''Problems Proposed and Solved,'' under the direction of a committee of which Professor B. F. Finkel, Drury College, is chairman.

Topics Involving Somewhat More Technical Treatment, designed to stimulate mathematical activity on the part of ambitious students and teachers; for example, such as the following:

''The Remainder Term in a Certain Development of $F(a+x)$,'' by Professor R. D. Carmichael, Indiana University.

''A Geometric Interpretation of the Function F in Hyperbolic Orbits,'' by Professor W. O. Beal, Illinois College.

''Certain Theorems in the Theory of Quadratic Residues,'' by Professor D. N. Lehmer, University of California.

''Some Inverse Problems in the Calculus of Variations,'' by Dr. E. J. Miles, Yale University.

''Amicable Number Triples,'' by Professor L. E. Dickson, University of Chicago.

H. E. SLAUGHT,
Managing Editor

BRANCH MOVEMENTS INDUCED BY CHANGES OF TEMPERATURE[1]

THAT changes occur in the linear dimensions of metals following fluctuations in the temperature is common knowledge, but that similar changes result in wood and living trees is not so generally known. Pure water has its smallest volume at 4° C., and lowering the temperature further increases its volume until it freezes; while ice contracts regularly with decreasing temperature and at a greater rate than any of the metals. It is generally supposed that marked changes in temperature have some effect upon the volume of tree trunks because radical clefts occur so frequently in severe winters and old clefts close during the middle of warm winter days and open again as the temperature sinks during the night. Since freezing water often bursts its container it is popularly held that such tree trunks are burst by the expansion of the freezing water in them. Caspary[2] has shown this

[1] This review of the literature of branch movements and observations grew out of a study of crown-rot of fruit trees and is published separately because it is only indirectly related to the main theme.

[2] R. Caspary, ''Ueber Frostspalten,'' *Bot. Zeit.*, 13: 449–62, 473–82, 489–500, 1855; ''Neue Untersuchungen über Frostspalten,'' *Bot. Zeit.*, 15: 329–35, 345–50, 361–71, 1857.